

ABSTRACT OF THE DISCLOSURE

A process for all-optical multi-bus networking of two-fiber bidirectional buses with two-fiber bidirectional Bus-To-Bus Links for a method of shared mesh protected Point-To-Point, Point-To-Multipoint and Broadcast Networking with the steps of:

- providing protected Bus-To-Bus service networking and Bus-To-Bus protection networking and in-service expansion with more buses, in place of networking with isolated rings connected through un-protected ring-to-ring connections,

- providing capacity expansion by replacement of single Wavelength Division Multiplexed (WDM) optical signals in few, wide bandwidth WDM channels with a plurality of optical signals Dense Wavelength Division Multiplexed (DWDM) to each WDM channel, and switching few WDM optical channels with small size modular Switching Fabrics, in place of high startup-cost, high capacity DWDM systems switching many DWDM optical signals with expensive and unreliable large size Switching Fabrics,

- providing the Add/Drop capability integrated with the Append/Drop-Continue capability, to Append more DWDM optical signals to a WDM channel already partially occupied by DWDM optical signals at non overlapping carrier frequencies, in place of requiring to Drop those signals before new ones could be Added,

- providing optical switching capability integrated with selective broadcast capability of Added or arriving at the Bus or the Bus-To-Bus input terminals WDM channels in place of using external optical Power Couplers with reduced transmission reach,

- providing one local, shared mesh protection with bus protection loops integrated with dedicated 1+1 Dual Bus Interworking protection to protect Bus Link failures, Bus-to-Bus Link failures, and Switching Fabrics and other equipment failures with

reserved as low as 25% of protection bandwidths, in place of ring protection with 50% of reserved protection bandwidth and un-protected ring-to-ring connections.